WALL HANGING ADJUSTABLE MOUNT AND METHOD

Cross Reference to Related Applications

This application claims the benefit of U.S. provisional Serial No. 60/477,394, filed June 11, 2003, and U.S. provisional Serial No. 60/534,158, filed January 2, 2004.

Background of the Invention

This invention concerns mounts for wall hangings such as framed pictures. Difficulties are often encountered with achieving a level mount where two supports are used, since the two supports must be at equal heights to level the wall hanging.

It also can be difficult to align a single supported wall hanging with other hangings in a grouping.

A wall hanging mount should also be useable with wire hung pictures and saw tooth supports.

These difficulties have long been recognized and various adjustable mounts proposed, but those have usually been costly, complex, difficult to use devices, which sometimes have not allowed an infinite height adjustment.

It is the object of the present invention to provide a simple, low cost mounting for wall hangings which also allows an infinite adjustment in height within a range of adjustment.

Summary of the Invention

The above recited object and other objects which will be appreciated upon a reading of the following specification and claims are achieved by a mounting element having a

engagement feature configured to engage a support on the wall hanging to be mounted. The element is secured on a wall with a threaded fastener such as a screw passed through the element at an eccentric location with respect to the engagement feature.

The mounting element is normally held tight against a wall surface by pressure developed when the fastener is tightened. With the fastener not fully tightened, the element is rotated about the eccentric axis of the fastener, causing the location of the perimeter engagement to shift vertically. After a desired adjustment is made, the fastener is fully tightened to secure the element in its adjusted position.

Protrusions on a back surface of the element may be provided which are pushed slightly into the wall surface to prevent slippage out of an adjusted position.

The mounting element may be of a generally circular disc shape. In a first embodiment, a groove around the perimeter of the element defined by outwardly flared sides comprises the engagement feature which can receive a wire used to support the wall hanging on the mounting element.

In a second embodiment, the mounting element comprises a disc having two sets of oppositely flared teeth arranged about its perimeter, the teeth in each set alternately located about the circumference. The opposite flaring of the sides of the teeth creates an intervening annular space the bottom which also comprises an engagement feature which can receive a support wire but also can be engaged by saw tooth features on conventional support pieces affixed to the wall hanging. The bottom of the annular space is stepped to secure the engagement with saw teeth, and also to enable a simple mold comprised of a cope and mold for injection molding of the element from plastic, eliminating the need for mold slides or actions.

The front face of the element is preferably counterbored on both sides about the eccentrically located hole through which the threaded fastener passes, on the front side to recess the fastener head, on the underside to accommodate any portion of the wall anchor that protrudes above the wall surface.

Description of the Drawings

Figure 1 is a front view of a first embodiment of a mounting element according to the present invention.

Figure 2 is a view of the section 2-2 taken in Figure 1, with screw and a wire seated in a perimeter groove.

Figure 3 is a side view of the element shown in Figure 1.

Figure 4A-4C are front views of the element shown in Figures 1-3 in respective adjusted positions.

Figure 5 is a pictorial view of a second embodiment of a mounting element according to the present invention.

Figure 6 is a front view of the mounting element shown in Figure 5.

Figure 7 is a side view of the mounting element shown in Figures 5 and 6.

Figure 8 is a view of the section 8-8 taken in Figure 6.

Figure 9 is a view of the section 9-9 taken in Figure 6.

Figure 10 is a view of the section 9 with the mounting element installed on a hollow wall.

Figure 11A and 11B are front views of the mounting element shown in Figures 5-

10 in two adjusted positions with respect to a saw tooth support piece shown which would be attached to the wall hanging.

Detailed Description

In the following detailed description, certain specific terminology will be employed for the sake of clarity and a particular embodiment described in accordance with the requirements of 35 USC 112, but it is to be understood that the same is not intended to be limiting and should not be so construed inasmuch as the invention is capable of taking many forms and variations within the scope of the appended claims

Referring to the drawings, and particularly Figures 1-4C, the present invention includes a mounting element 10, here comprised of a small disc (which could be molded from plastic or die cast from metal) having a peripheral V-groove 12 defined by outwardly flared sides.

A through axial hole 14 is formed therein at a location eccentric with respect to the center of the perimeter of the element 10. The hole 14 receives a threaded fastener 16 used to secure the element 10 to a wall 18. When the screw 16 is not tightened, the element 10 can be rotated about an axis defined by the fastener 16.

As seen in Figures 4A-4C, the topmost part of the element 10 and groove 12 shifts up and down within the range defined by the eccentricity of the location of the hole 14.

The top of the groove 12 provides an engagement feature for a support such as a wire 20 or saw tooth hanger 36, attached to a wall hanging (not shown).

Thus, an infinite vertical adjustment can be provided of the topmost portion of the element 10 to enable adjustment of the height of support of the wall hanging.

Upon tightening of the fastener 16, sufficient friction is developed to maintain the element 10 in any adjusted position.

The element 10 should preferably be initially positioned in the nine o'clock position of Figure 4B to allow up or down adjustment as necessary.

Figures 5-11B illustrate a second embodiment, in which the mounting element 10A comprises a toothed disc in which two circumferential series of offset outwardly flared teeth 22, 24 are separated by a stepped depth annular space 26.

The space adjacent teeth 22, 24 are at different radial depths, to create the stepped depth configuration of the space 26. The space 26 could also be a simple V groove as described above.

A hole 28 extends through the element 10A at a location eccentric to the center of the generally circular perimeter thereof. A first counterbore 30 is located on a side adjacent wall engaging protrusions 32 and a second counterbore 34 on the opposite side.

The complementary toothed shape allows injection molding of the element 10A without slides, since tools A and B (Figures 8 and 9) can be drawn straight apart after molding. This creates the annular space 26.

The stepped depth annular space 26 is advantageous in that a saw toothed support 36 (Figures 11A, 11B) can engage one of the shoulders defining the stepped depth. At same time, a wire could also be used with a simple V shape groove.

Counterbore 34 accommodates the protruding portion of a MOLLY™ or other type wall board anchor 38, while counterbore 30 at least partially recesses the head of a threaded fastener 40 threaded into the anchor 38.

Figures 11A, 11B show the range of vertical adjustment available by rotation of the element 10A about the fastener 40.

Thus, a simple to use, low cost adjustable mounting has been provided.